

ARCS PROCEDURE:	RESET WIND SENSOR VERIFICATION	PRO(WND)-001.002
Author: J. Zirzow		July 20, 1998 Page 1 of 3

## RESET Wind Sensor Verification

### I. Purpose:

The document describes the procedures necessary to lower the Met Mast and check the RM Young Wind Monitor.

### II. Cautions and Hazards:

- If the wind speed sensor is brought down from the wind tower, at least two trained persons are required and take care not to be struck by the tower or weighted mount.
- This procedure is not to be performed if lightning is observed or expected.

### III. Requirements:

- Chart showing the RPM and Expected Readings on Datalogger.
- Chart showing quadrant and expected readings.
- Torque nut.
- Anemometer drive.
- Positioning arm.
- Angle fixture.
- Wrench.
- Laptop or portable datalogger.
- Two people.

### IV. Procedure:

#### A. Wind Speed:

1. Lower tower. **(Need specific procedures for doing this)**
2. Remove the propeller from the propeller shaft and install the torque nut provided.
3. Connect the anemometer drive to the wind monitor body and the motor to the torque nut.
4. Select one of the following RPM levels on the anemometer drive and start the unit. ***(How does it start, was this thing plugged into a DC circuit?)***
5. Wait for the RPM level to stabilize. This should take \_\_\_\_\_ minutes.

ARCS PROCEDURE:	RESET WIND SENSOR VERIFICATION	PRO(WND)-001.002
Author: J. Zirzow		July 20, 1998 Page 2 of 3

6. Refer to "Expected Datalogger Readings at a given RPM" table (Attachment 1).
7. Compare the readings from the anemometer drive and the sensor output as read from the computer (**or portable datalogger?**). The wind speed measured should be within +/- 0.1M/S of that indicated in the above table. (The resolution of the wind speed measurement is 0.01 M/S.)

#### B. Wind Direction:

1. Insert the angle fixture between the orientation ring and the wind monitor.
2. Make sure that the notches of the orientation ring, angle fixture, and wind monitor match up.
3. Use the positioning arm to hold the tail of the wind monitor in the correct position. **(I believe this will not be possible on ours. We will have to lower the monitor first, then set it up somewhere)**
4. Rotate the wind monitor through the positions listed below and compare them to directions measured by the datalogger **(or laptop?)**
5. Refer to the "Expected Reading in a given Quadrant" table (Attachment 2).
  - The accuracy of this measurement is 5.0 degrees, with a resolution of 1.0 degree.
  - Note: The absolute accuracy of this measurement depends on the exactness of the orientation of the sensor with respect to true north.
6. Record the date, start-time, end-time, and comments on the Site Data Log.

#### V. References:

1. Dick Hart, "SMOS Sensor Verification."

#### VI. Attachments:

1. Expected Datalogger Readings at a given RPM
2. Expected Datalogger Readings in a given Quadrant
3. Acceptance Test, Wind Monitor

ARCS PROCEDURE:	RESET WIND SENSOR VERIFICATION	PRO(WND)-001.002
Author: J. Zirzow		July 20, 1998 Page 3 of 3

**Attachment 1:** Expected Datalogger Readings at a given RPM

RPM	Expected Readings
500	2.77 +/- 0.10 M/S
750	4.02 +/- 0.10 M/S
1000	5.26 +/- 0.11 M/S ( <i>Why .11? Typo?</i> )

**Attachment 2:** Expected Reading in a given Quadrant

Quadrant	Expected Readings
0	0 +/- 5 degrees
90	90 +/- 5 degrees
180	180 +/- 5 degrees
270	270 +/- 5 degrees
355	355 +/- 5 degrees